

Type.—Male and 2 paratypes (females), U. S. N. M. Cat. No. 53988.

Type locality.—Camp Perrin, Haiti, collected Aug. 2, 1925, by W. A. Hoffman.

Other localities.—San José de las Matas, 1000–2000 ft., Dominican Republic, collected in June, 1938, by P. J. Darlington.

Remarks.—In this species the apical joints of the antennae in the males are not abnormal, but instead the third joint is unusually short while that in the female is not. The male also has slightly heavier antennae. The antennae differ from those of other members of the group by being nearly as long as the beetle.

THE DISCOVERY OF THE WORKER CASTE OF AN INQUILINOUS ANT, *EPIPHEIDOLE INQUILINA* WHEELER.

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In 1904, the late Dr. W. M. Wheeler described an inquiline ant, *Epipheidole inquilina* (Bull. Amer. Mus. Nat. Hist. 20 : 15–17), which he had collected from three nests of a harvesting ant, *Pheidole pilifera* subsp. *coloradensis* Emery. Both the host ant, and its inquiline were found in the vicinity of Colorado Springs, Colo. One colony contained 3 males and numerous soldiers and workers of *coloradensis*, and many males of *inquilina*; a second colony contained a few soldiers and workers of the host species and a single virgin queen of the inquiline; and a third colony, many soldiers and workers of *coloradensis* and a dealated queen, numerous virgin queens, a few males, and a peculiar gynandromorph of *inquilina*.

Two features concerning the ants forcibly impressed Wheeler, (1) that no worker caste of the inquiline could be found, and (2) that the host queen was missing in each of the colonies examined. Wheeler very naturally inferred that the ants had lost their worker caste because of their inquiline or parasitic nature. He also came to the conclusion that the mother queen of *coloradensis* must have been replaced by a queen of the inquiline just as queens of such inquilineous genera as *Anergates* and *Sympheidole* replace the queens of their host species.

The above-mentioned facts as well as the unusually small size of the queen of *inquilina* and its different habitus led Wheeler to erect the monobasic genus *Epipheidole* for the reception of this species, although he was apparently unable to find any outstanding characters by which it could be clearly distinguished from *Pheidole*. He remarked that if the worker of *inquilina* had been present the taxonomic relationships of this species might

be more clearly understood. So far as known no additional specimens of this interesting inquiline have been collected since the date of Wheeler's article. It might be mentioned, however, that Wheeler was not the first formicologist to see a queen of *inquilina*. Emery (Zool. Jahrb. Syst. 8 : 290, 1895) mentions having received from Theodore Pergande some Nebraskan specimens of *Pheidole pilifera* (Roger) among which he detected an unusually small or microgynic queen. This he erroneously thought was a small, abnormal queen of *pilifera*. Emery's remarks concerning this queen are as follows: "Mit diesen Soldaten und einigen Arbeiterinnen sandte mir Herr Pergande ein flügelloses, aber geflügelt gewesenes Zwergweibchen von kaum $3\frac{1}{2}$ mm., mit wenig entwickeltem Thorax und dicken, stumpfen, beulenartigen Metanotumdornen." Emery, having had no opportunity to see these ants in actual life as had Wheeler, failed to grasp the morphological significance of the queen and consequently did not fully describe or figure it. Wheeler, however, referred to the specimen in his publication, pages 2-3, as follows: "There can be little doubt that this insect was a female of *Epipheidole inquilina* described below as occurring with *Pheidole pilifera* var. *coloradensis*."

Recently while arranging the ants in the National Museum collection I encountered 7 specimens of *inquilina* among the Nebraskan collection of *Pheidole pilifera* referred to above. Five of these specimens, 4 queens and 1 worker, bear the following labels: "Nebr.; Nov. 11, '83; Collection T. Pergande." Two other specimens, both queens, bear labels as follows: "Nebr.; May '83; Collection T. Pergande."

Through the courtesy of Mr. Nathan Banks of the Museum of Comparative Zoology, Cambridge, Mass., I have been able to examine 4 queen cotypes of *Epipheidole inquilina* Wheeler. These bear the label "Broadmoor, Colorado Springs, Colorado; Aug. 11, '03." On comparing the Nebraskan queens with these I find that the Nebraskan specimens differ mainly in that each queen has the frontal region of the head more protuberant, the vertex more depressed, and the occipital lobes more angularly pronounced. In addition the color is a much deeper brown. These characters, although perfectly obvious, do not in my opinion warrant considering the specimens of new subspecific or specific rank.

Although there is only 1 worker of *inquilina* in the Nebraskan collection, this specimen is so similar to the queen of *inquilina* in its morphological characters and so different from the worker of *pilifera* that I have no hesitancy in assigning it to *inquilina* and describing and figuring it as such. As there are no definite locality or collector labels on the specimens of *pilifera* and *inquilina*, I wished to determine, if possible, where these were collected, and by whom. Upon investigating the matter I

learned from old records in the National Museum that Lawrence Bruner was collecting insects in Nebraska during the period covered by the labels and was in intimate contact with Pergande at this time. Seeking to corroborate these apparent facts I wrote to Prof. Myron H. Swenk, Chairman of the Department of Entomology of the University of Nebraska, about the matter. Prof. Swenk replied as follows: "I think there is practically no doubt but that the specimens in the National Museum collection from the Theodore Pergande collection that bear only the labels Nebraska, May, 1883, and Nov. 11, 1883, were collected by Lawrence Bruner, and very probably at West Point, Nebr. The chirography on the label examined is practically that without question of Lawrence Bruner, and we know that Bruner was at West Point, Nebr., in May of 1883, making preparations for a trip through the Rocky Mountains, from which he had returned to Washington by October 30 of that year, and probably returned to West Point in time to have collected these ants there on November 11."

The single worker of *Epipheidole inquilina* is described and illustrated below (Fig. 1). For purpose of comparison the *Pheidole pilifera* worker is also illustrated (Fig. 2). The outstanding characters by which the workers of the two species can be distinguished are given in a summary at the conclusion of the description of the worker of *E. inquilina*.

Epipheidole inquilina Wheeler.

Epipheidole inquilina Wheeler, Bull. Amer. Mus. Nat. Hist. 20 : 15-17 (1904) *queen, male*. Pl. 2, figs. 12-14 (*queen*); 15-17 (*male*).

Pheidole pilifera (part) Emery, Zool. Jahrb. Syst. 8 : 290 (1895) *abnormal queen*.

Worker.—Length 2 mm. (Fig. 1).

Head, excluding mandibles and eyes, subquadrate, approximately as broad as long, with deeply emarginate posterior border, angular occipital lobes, and weakly convex, somewhat subparallel sides. Eye oval, prominent, strongly convex, placed nearer to the anterior angle of the head than to the posterior angle. Clypeus moderately convex, anterior border rounded, entire; posterior border narrowly rounded and extending well back between the frontal carinae. Frontal carinae subparallel. Frontal area not clearly defined. A weak but distinct frontal groove extends from the region of the frontal area back to the posterior border of the head. Antenna 12-segmented; scape slender, slightly enlarging toward apex, funiculus with a distinct, 3-segmented club, the last segment of which exceeds the combined length of the two preceding segments. Thorax from above more robust than that of the *Pheidole pilifera* worker, especially from the mesonotum backward; promesonotal suture distinct; mesoepinotal region with a deep and rather broad constriction; epinotum with a pair of large, somewhat finger-shaped spines. Petiole viewed anteriorly violin shaped; from behind the petiolar node appears blunt, entire, horizontal above, and with somewhat subparallel sides. Postpetiole from above approximately

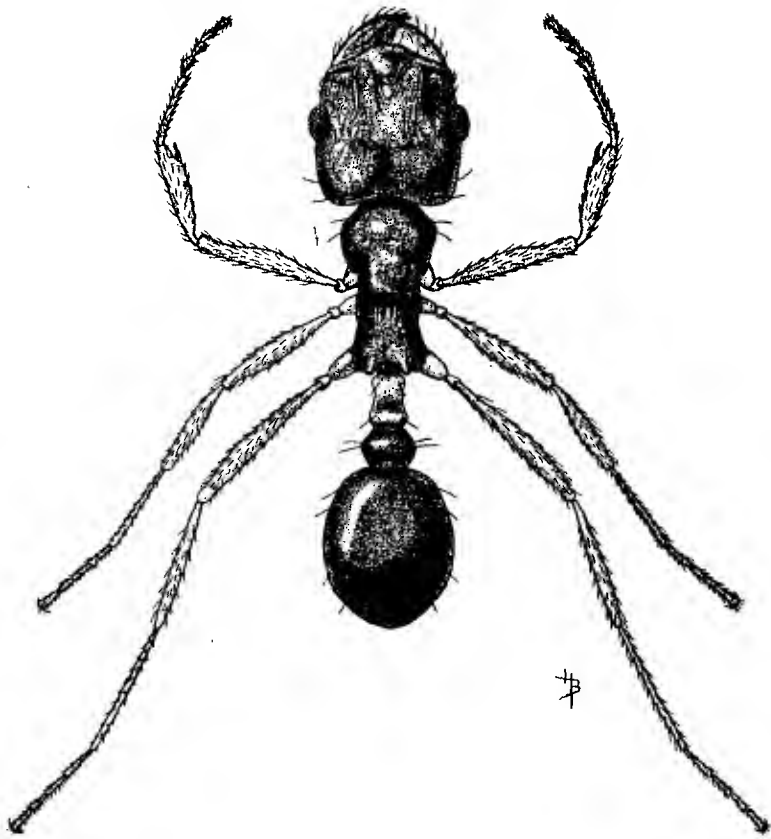


Fig. 1. Worker of an inquiline ant, *Epipheidole inquilina* Wheeler.

as long as broad, with distinctly but not strongly angulate lateral borders; side of postpetiole converging anterior to, and posterior to, the angulations. Anterior tibial spurs present, spurs of middle and hind tibiae absent. Gaster oval, subtruncate at base, but without well defined angular humeri. Mandibles, clypeus, frontal area and region posterior to it, posterior part of pronotum, most of mesonotum, anterior part of petiole, dorsal surface of postpetiole, and gaster, shining; remainder of body densely punctate, dull. Cheeks, region between eyes and frontal carinae, and front, with a few weak, longitudinal rugulae. Epinotum also somewhat rugulose, especially in the region of the mesoepinotal constriction. Posterior dorsal surface of head with a few scattered foveolae.

Hairs pale yellowish or grayish, sparse, suberect to erect; pilosity of appendages shorter, denser, and more appressed.

Mandibular teeth and eyes black; body brown with lighter appendages and gaster, the latter somewhat infuscated posteriorly.

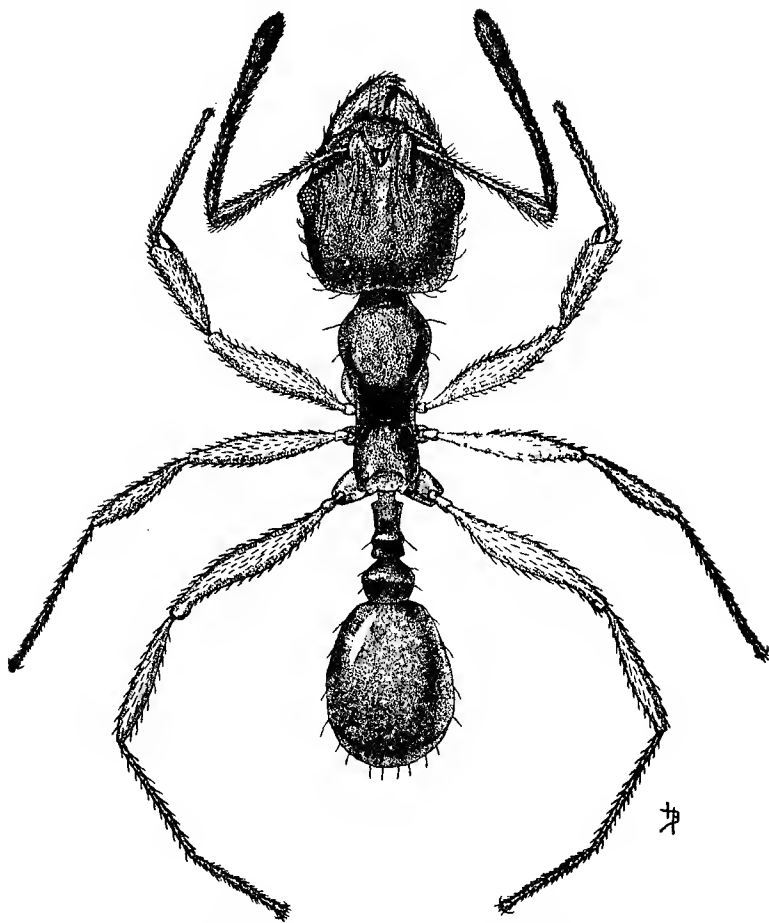


Fig. 2. Worker of the host ant, *Pheidole pilifera* (Roger).

(Drawings by H. B. Bradford. Each drawing x 76).

Described from a single worker in the National Museum collection bearing only the label "Nebr.; Nov. 11, '83; Collection T. Pergande." Apparently collected by Lawrence Bruner at West Point, Nebr.

The worker of *inquilina* bears such a strong resemblance to that of *Pheidole pilifera* that it could be easily mistaken for that species. It can be distinguished, however, by the following characters: (1) The deep emargination of the posterior border of the head; (2) the rather pronounced, angular occipital lobes;

(3) the faint, yet distinct, frontal groove running from the region of the frontal area to the posterior border of the head; (4) the convex, protuberant eyes, which clearly stand out above the general surface of the head; (5) the more robust thorax; (6) the presence of a distinct promesonotal suture; (7) the large, peculiar, somewhat finger-shaped epinotal spines, which are very blunt at their ends; and (8) the more robust petiolar and postpetiolar nodes. Of the characters mentioned numbers 1, 4, and 7 are the most distinct.

After carefully studying the worker of *inquilina* and the workers of *pilifera* I feel quite certain that the former species must have arisen from a *Pheidole* ancestor, either that of its host species or a very closely related form, most probably the former. Although this ant has many characters in common with *Pheidole* (Wheeler, Emery, and others have been unable to find any very clear-cut generic characters by which the species can be distinguished from its host genus) it would seem unwise to synonymize the genus with *Pheidole*. The species apparently has no soldier caste, and it has almost completely lost its worker caste. Furthermore, the small size of the queen, its peculiar habitus, as well as that of the worker, and the habit of living as an inquiline in the nest of another ant seem to me to justify recognition of a distinct genus for this species.

It is difficult to conceive that *inquilina* is such a rare ant that one may not expect to collect it on various occasions in the future. Its host is one of the most common and widely distributed ants of the genus *Pheidole* in the United States, occurring in all sections except perhaps a few of the extreme Western and Southwestern States. A careful search by formicologists for *inquilina* in the future might help to solve the question as to whether colonies of *pilifera* containing this inquiline are always queenless, and, if so, by what method or methods this comes about.
